

I claim:

1. An RFID tag, comprising:
  - a substrate having a top surface and a bottom surface;
  - 5 an RFID integrated circuit disposed on the top surface of the substrate;
  - a first electrically conductive region associated with the top surface of the substrate and electrically coupled to the RFID integrated circuit;
  - 10 a second electrically conductive region associated with the bottom surface of the substrate and electrically coupled to the first conductive region, the first and second conductive regions forming an RFID antenna;
  - the RFID integrated circuit, first conductive region and second conductive region together providing an RFID function;
  - 15 an attachment layer associated with the bottom surface of the substrate for attaching the tag to a surface; and
  - an adhesion modifying layer modifying the adhesion of the second conductive region such that the second conductive region is disrupted if the tag is tampered or removed from the surface.
2. The RFID tag of claim 1, wherein the second conductive region is electrically coupled to the first conductive region via non-contact coupling.
3. The RFID tag of claim 2, wherein the non-contact coupling is one of capacitive coupling or inductive coupling.
- 25 4. The RFID tag of claim 1, wherein the first conductive region is directly coupled to the RFID integrated circuit.
5. The RFID tag of claim 1, wherein the adhesion modifying layer is arranged between the bottom of the substrate and the second conductive region.

6. The RFID tag of claim 1, wherein the adhesion modifying layer is arranged between the second conductive region and the attachment layer.
7. The RFID tag of claim 1, wherein the attachment layer is a layer of adhesive.

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8. The RFID tag of claim 1, further comprising an overlayer formed over the first conductive region and the RFID integrated circuit.
9. The RFID tag of claim 1, further comprising printed graphics applied to the tag.

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10. An RFID tag, comprising:
  - a substrate having a top surface and a bottom surface;
  - an RFID integrated circuit disposed on the top surface of the substrate;
  - a first electrically conductive region disposed on the top surface of the substrate

15 and electrically coupled to the RFID integrated circuit, the first conductive region forming an RFID antenna;

  - a second electrically conductive region disposed on the bottom surface of the substrate and electrically coupled to the RFID integrated circuit, the RFID integrated circuit adapted to detect at least one electrical property of the second conductive region;

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    - an attachment layer for attaching the tag to a surface, the attachment layer being associated with the bottom of the substrate; and
    - an adhesion modifying layer modifying the adhesion of the second conductive region such that the second conductive region is disrupted if the tag is tampered or removed from the surface, thereby modifying the at least one electrical property of the

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    - second conductive region detected by the RFID integrated circuit.

  11. The RFID tag of claim 10, wherein the second conductive region is coupled to the RFID integrated circuit via non-contact coupling.

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  12. The RFID tag of claim 11, wherein the non-contact coupling is one of capacitive coupling or inductive coupling.

13. The RFID tag of claim 10, wherein the second conductive region is arranged around a perimeter of the bottom surface of the substrate.

5 14. The RFID tag of claim 10, wherein the RFID integrated circuit is adapted to record or transmit information representing the at least one electrical property of the second conductive region.

10 15. The RFID tag of claim 10, further comprising a power source within the tag and coupled to RFID integrated circuit.

16. The RFID tag of claim 10, further comprising at least one coupling circuit directly connected to the RFID integrated circuit for electrically coupling the RFID integrated circuit to the second conductive region.

15 17. The RFID tag of claim 10, further comprising at least one coupling circuit arranged on the bottom surface of the substrate and connected to the second conductive region, for coupling of the second conductive region to the RFID integrated circuit.

20 18. The RFID tag of claim 14, wherein the at least one electrical property is an electrical impedance value of the second conductive region.

19. An RFID tag, comprising:  
a first substrate having a top surface and a bottom surface;  
25 an electrically conductive region disposed on the bottom surface of the substrate, the conductive region forming an RFID antenna;  
a first attachment layer for attaching the tag to a surface, the first attachment layer being associated with the bottom surface of the first substrate;  
a second substrate having a top surface and a bottom surface;  
30 a second attachment layer associated with the bottom surface of the second substrate and attaching the second substrate to the top surface of the first substrate;

an RFID integrated circuit disposed on the bottom surface of the second substrate and electrically coupled to the electrically conductive region; and

a first adhesion modifying layer modifying the adhesion of the RFID integrated circuit such that the RFID integrated circuit is modified if the second substrate is removed from the first substrate.

20. The RFID tag of claim 19, further comprising a second adhesion modifying layer modifying the adhesion of the electrically conductive region such that the electrically conductive region is disrupted if the tag is tampered or removed from the surface

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21. The RFID tag of claim 20, wherein the second adhesion modifying layer is arranged between the bottom surface of the first substrate and the electrically conductive region.

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22. The RFID tag of claim 20, wherein the second adhesion modifying layer is arranged between the electrically conductive region and the first attachment layer.

23. The RFID tag of claim 19, further comprising at least one electrical coupling circuit disposed on the bottom surface of the second substrate and connected to the RFID integrated circuit, the at least one coupling circuit electrically coupling the RFID integrated circuit to the electrically conductive region.

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24. The RFID tag of claim 23, wherein the first adhesion modifying layer modifies the adhesion of the at least one coupling circuit.

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25. The RFID tag of claim 19, wherein the first adhesion modifying layer is arranged between the bottom surface of the second substrate and the RFID integrated circuit.

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26. The RFID tag of claim 19, wherein the first adhesion modifying layer is arranged between the RFID integrated circuit and the second attachment layer.

27. The RFID tag of claim 23, wherein the first adhesion modifying layer is arranged between the bottom of the second substrate and the at least one coupling circuit.
28. The RFID tag of claim 23, wherein the first adhesion modifying layer is arranged between the at least one coupling circuit and the second attachment layer.  
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29. The RFID tag of claim 19 wherein the first attachment layer is a layer of adhesive.
30. The RFID tag of claim 19 wherein the second attachment layer is a layer of adhesive.  
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31. An RFID tag, comprising:
  - a first substrate having a top surface and a bottom surface;
  - a first electrically conductive region disposed on the top surface of the first substrate, the first conductive region forming an RFID antenna;
  - a second electrically conductive region disposed on the bottom surface of the first substrate;
  - a first attachment layer for attaching the tag to a surface, the first attachment layer being associated with the bottom surface of the first substrate;
  - a first adhesion modifying layer modifying the adhesion of the second electrically conductive region such that the second electrically conductive region is disrupted if the tag is tampered or removed from the surface;  
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  - a second substrate having a top surface and a bottom surface;
  - a second attachment layer associated with the bottom surface of the second substrate and attaching the second substrate to the first substrate;  
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  - an RFID integrated circuit disposed on the bottom surface of the second substrate and electrically coupled to the first and second electrically conductive regions;
  - a second adhesion modifying layer modifying the adhesion of the RFID integrated circuit such that the RFID integrated circuit is disrupted if the second substrate is removed from the first substrate.  
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32. The RFID tag of claim 31, wherein the RFID integrated circuit and first electrically conductive region together provide an RFID function.

33. The RFID tag of claim 31, wherein the RFID integrated circuit is adapted to  
5 detect at least one electrical property of the second conductive region and to record or transmit information representing the at least one electrical property of the second conductive region.

34. The RFID tag of claim 31, further comprising at least one first electrical coupling  
10 circuit disposed on the bottom surface of the second substrate and coupling the first conductive region to the RFID integrated circuit.

35. The RFID tag of claim 34, wherein the second adhesion modifying layer modifies the adhesion of the at least one first coupling circuit.

15 36. The RFID tag of claim 34, wherein the second adhesion modifying layer is arranged between the bottom surface of the second substrate and the at least one first coupling circuit.

20 37. The RFID tag of claim 34, wherein the second adhesion modifying layer is arranged between the at least one first coupling circuit and the second attachment layer.

25 38. The RFID tag of claim 31, further comprising at least one second electrical coupling circuit disposed on the bottom surface of the second substrate and coupling the second conductive region to the RFID integrated circuit.

39. The RFID tag of claim 38, wherein the second adhesion modifying layer modifies the adhesion of the at least one second coupling circuit.

40. The RFID tag of claim 38, wherein the second adhesion modifying layer is arranged between the bottom surface of the second substrate and the at least one second coupling circuit.

5 41. The RFID tag of claim 38, wherein the second adhesion modifying layer is arranged between the at least one second coupling circuit and the second attachment layer.

10 42. The RFID tag of claim 31, further comprising a dielectric disposed between the first conductive region and the RFID integrated circuit.

43. A method of forming and RFID tag, comprising:  
disposing an electrically conductive region on a bottom surface of a first substrate;  
15 disposing an RFID integrated circuit on the bottom surface of a second substrate;  
associating a first attachment layer with the bottom surface of the first substrate to attach the tag to a surface;  
associating a second attachment layer with the bottom surface of the second substrate;  
20 attaching the bottom surface of the second substrate to the top surface of the first substrate so that the RFID integrated circuit is coupled to the conductive region; and  
providing a first adhesion modifying layer to modify the adhesion of the conductive region such that the conductive region is disrupted if the first substrate is tampered or removed from the surface.

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44. The RFID tag of claim 43, further comprising providing a second adhesion modifying layer to modify the adhesion of the RFID integrated circuit such that the RFID integrated circuit is disrupted if the second substrate is tampered or removed from the first substrate.

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45. The method of claim 44, further comprising disposing at least one electrical coupling circuit on the bottom surface of the second substrate and connected to the RFID integrated circuit to electrically couple the RFID integrated circuit to the conductive region, such that the at least one electrical coupling circuit is disrupted if the second substrate is tampered or removed from the first substrate.

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46. The method of claim 45, further comprising disposing a second electrically conductive region on the top surface of the first substrate and electrically coupling the second electrically conductive region to the RFID integrated circuit.

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47. The method of claim 46, further comprising disposing at least one second electrical coupling circuit on the bottom of the second substrate and connected to the RFID integrated circuit to electrically couple the RFID integrated circuit to the second conductive region, such that the at least one second electrical coupling circuit is disrupted if the second substrate is tampered or removed from the first substrate.

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48. An RFID tag, comprising:

20 a substrate having a top surface and a bottom surface;

an electrically conductive region disposed on the bottom surface of the substrate, the conductive region forming an RFID antenna;

an attachment layer for attaching the tag to a surface, the attachment layer being associated with the bottom surface of the substrate;

25 an RFID integrated circuit disposed on the top surface of the substrate and electrically coupled to the electrically conductive region; and

a first adhesion modifying layer modifying the adhesion of the electrically conductive region such that the electrically conductive region is disrupted if the tag is tampered or removed from the surface.

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49. The RFID tag of claim 48, further comprising a second adhesion modifying layer modifying the adhesion of the RFID integrated circuit such that the RFID integrated circuit is modified if the RFID circuit is removed from the substrate.

50. The RFID tag of claim 48, wherein the first adhesion modifying layer is arranged between the bottom surface of the substrate and the electrically conductive region.

5 51. The RFID tag of claim 48, wherein the first adhesion modifying layer is arranged between the electrically conductive region and the attachment layer.

52. An RFID tag, comprising:

a substrate having a top surface and a bottom surface;

10 an RFID integrated circuit disposed on the top surface of the substrate;

a first electrically conductive region associated with the top surface of the substrate and electrically coupled to the RFID integrated circuit via non-contact coupling, the first conductive region forming an RFID antenna;

15 a second electrically conductive region associated with the bottom surface of the substrate and electrically coupled to the RFID circuit via non-contact coupling;

an attachment layer associated with the bottom surface of the substrate for attaching the tag to a surface; and

20 a first adhesion modifying layer modifying the adhesion of the second conductive region such that the second conductive region is disrupted if the tag is tampered or removed from the surface.

53. The RFID tag of claim 52, further comprising a second adhesion modifying layer modifying the adhesion of the RFID integrated circuit such that the RFID integrated circuit is modified if the RFID circuit is removed from the substrate.

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54. The RFID tag of claim 52, wherein the first adhesion modifying layer is arranged between the bottom of the substrate and the second conductive region.

30 55. The RFID tag of claim 52, wherein the first adhesion modifying layer is arranged between the second conductive region and the attachment layer.

56. The RFID tag of claim 52, wherein the attachment layer is a layer of adhesive.
57. The RFID tag of claim 52, further comprising an overlayer formed over the first conductive region and the RFID integrated circuit.

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